Engineering Division
W/OSO321:FLP

NOAA WIND PROFILER MODIFICATION NOTE 3
(for Electronics Technicians)

SUBJECT : Receiver Sensitivity Time Control (STC) Module

PURPOSE : Correct receiver saturation at low range gates.

EQUIPMENT AFFECTED: PROF

PARTS REQUIRED : 1 STC Module

MOD PROCUREMENT : The Profiler Program Office (PPO) will mail the required parts to the station without station action.

SPECIAL TOOLS AND :	1 ea	Small, short Phillips screwdriver
TEST EQUIPMENT	1 ea	3/16" nut driver
REQUIRED	1 ea	Potentiometer adjusting tool
	1 ea	100 MHz oscilloscope with clip-on probe

TIME REQUIRED : 1 Work hour plus travel

EFFECT ON OTHER INSTRUCTIONS : None. File this note in EHB-9.

CERTIFICATION : The PPO tested this modification.

GENERAL

The wind profiler reports erroneously low wind speeds in the first few range gates. Tests show there is spectral distortion in the first few range gates caused by receiver saturation. This note provides instructions for the installation of a STC module in the receiver. The STC module decreases the receiver gain in the first few range gates. This corrects the erroneously low wind speeds reported in the few range gates.

PROCEDURE

A. Installation

1. Call the Profiler Control Center (PCC) at (303) 497-6033 to tell them you are doing the modification.

2. Turn off the profiler equipment using the prescribed power-down sequence.

3. Remove the side panel from the Beam Steering Unit (BSU) cabinet. Disconnect all the cables on the receiver back panel. Note the position of cable W103 connected to J2 and W102 connected to J4. All other cables use N or D type connectors. Do not drop the small screws that fasten the D type connectors to J3 and J5 into the exposed BSU. Remove the rack panel located just above the receiver. This will allow access to the chassis to do a final calibration.

4. Remove the receiver from the rack and put it on the workbench. Remove the top cover. You may ignore the warranty seals.

5. Refer to figure 1. Disconnect the harness to J4 of assembly A1. Save the two #4-40 screws and washers. Do not stress the small wires at the connectors of the harness.

6. Remove the cover of the STC assembly. Remove the 3/16" hex post nearest to the J2 output connector. Refer to figure 1 point A for location of the hex post.

7. Mount the STC module as shown in figure 1. You may need to remove an adhesive-attached cable holder from the receiver chassis below the STC module. Removing the hex post will allow you to attach the STC module to J4 using a small Phillips screwdriver and needlenose pliers to hold the #4-40 screws. Replace the hex post in the STC module (point A in figure 1).

8. Connect the harness to the P1 input of the STC module. Secure with the #4-40 screws and washers provided with the STC kit.

9. Use a ballpoint pen and change the part number on the receiver front panel to read **WP-14012-1.**

10. Do not replace the receiver top cover. Install the receiver in the system. Reconnect all the cables on the rear panel.

This completes the equipment changes.

B. System checkout

1. You will now adjust the STC module with the receiver operating in the profiler.

2. Connect the oscilloscope probe to the PIN diode attenuator (SW1) as shown in figure 2. Use DC coupling. Set the oscilloscope to 1 volt/div vertical deflection and a 2 microsecond/div sweep time. Trigger on the rising edge of the waveform.

3. Power up the profiler using the prescribed sequence and wait for the system to cycle normally.

4. The profiler beam switches every minute in the following order: east-high, east-low, north-high, north-low, vertical-high, and vertical-low mode. When the profiler is in the low mode of any beam, the waveform should resemble the oscilloscope display in figure 2. During the high mode the +1 volt level is about 39 microseconds. During any low mode, adjust the **LOSS** and **TIME** potentiometers on the STC module for a 0 volt, 6 microsecond "back porch" as shown in figure 2. The factory preset the **TIME** potentiometer for 6 microseconds. If needed, re-adjust for 6 microseconds.

5. Remove the oscilloscope probe. Place the cover on the receiver to minimize RF leakage from the transmitter. Do not secure with screws.

6. Call the PCC. They will confirm correct STC operation by checking the profiler data. The PCC may have you re-adjust the **LOSS** and **TIME** settings.

7. Secure the receiver top cover with screws after the PCC confirms correct operation. Replace the rack panel above the receiver.

REPORTING MODIFICATION

Target date for reporting this modification is 30 days after receipt of the kit. Report completion on WS Form H-28, Engineering Progress Report, according to instructions in EHB-4, part 2, using equipment code PROF.

J. Michael St. Clair
Chief, Engineering Division

Attachments

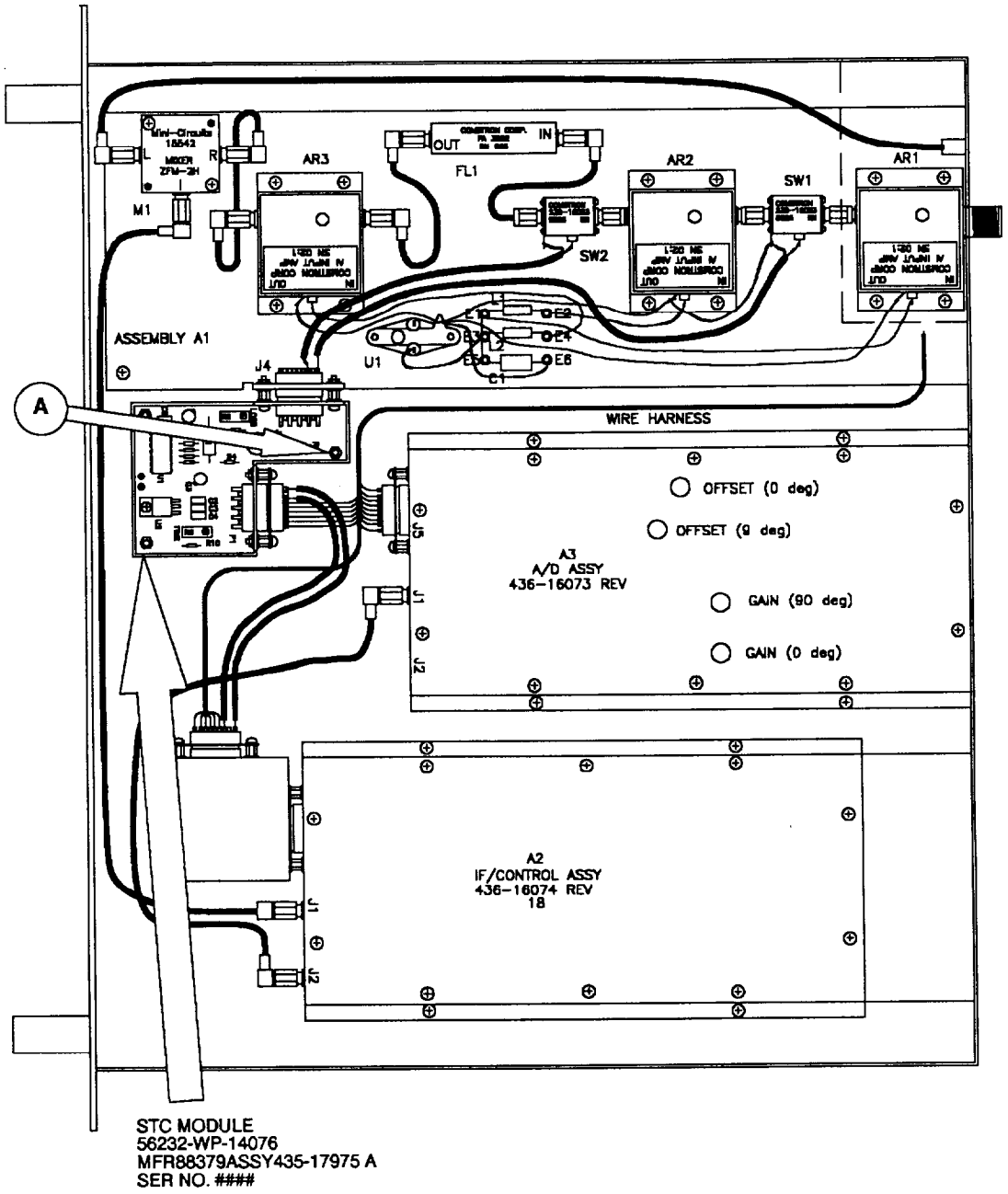

Figure 1
STC Installation

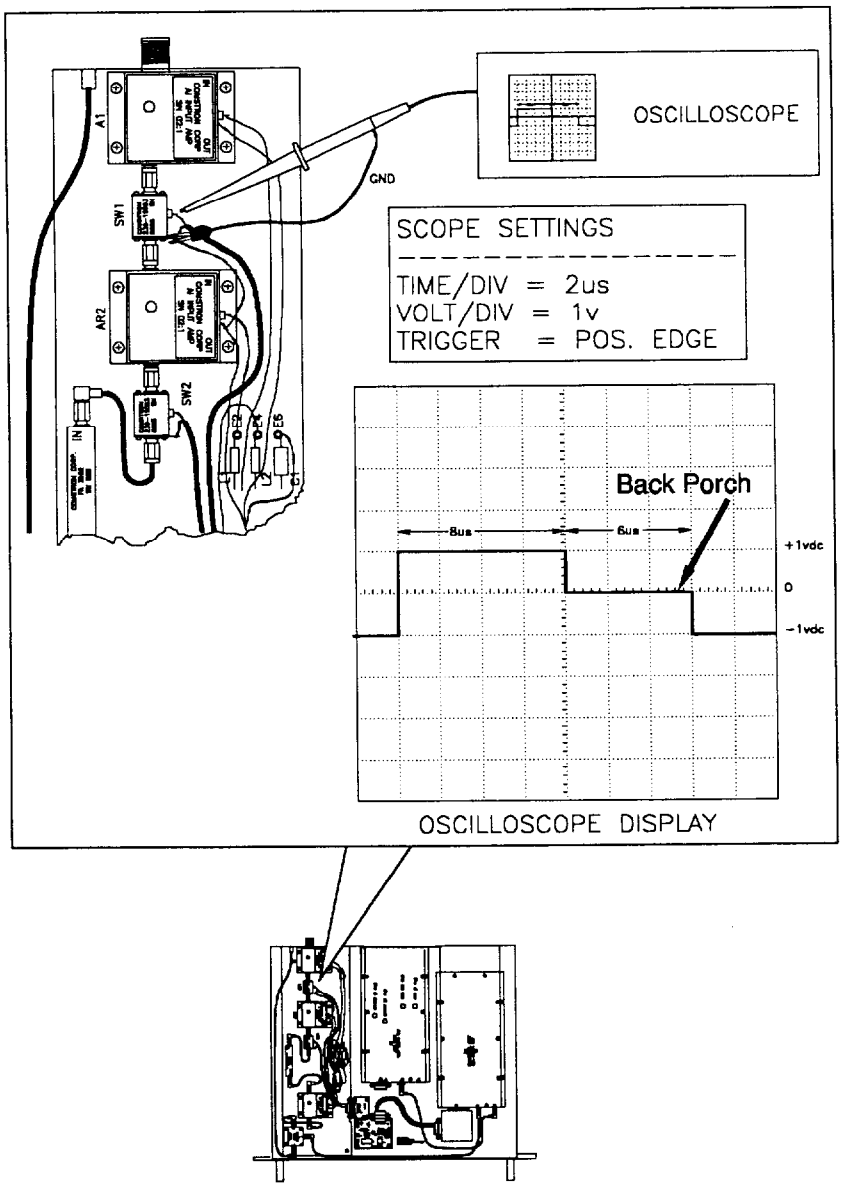

Figure 2
STC Calibration